potential limit of variation; the supposed direct adaptation is in reality nothing new, but rather the manifestation or release of a hitherto latent property. The new habitat is merely empirically new. Consequently DETTO agrees with KLEBS that a species should not be defined as it exists normally in nature, but should include all possible variations in all imaginable conditions. The capacity of an organism is not widened but demonstrated by environmental changes. Direct adaptation or ecogenesis is impossible because it implies that there is a setting aside of the constitutionally prescribed effect of a given stimulus in the interest of the organism, or that menacing factors are in reality beneficial. The direct adaptationist conceives of a vital mechanism that looks out for the future, and holds advantageous reactions in readiness for conditions which have never yet occurred! Ecogenesis must therefore be indirect in all cases, chance alone determining whether the new ecologism is of advantage or not. DETTO, who agrees with KLEBS at so many points, holds in direct opposition to him that the external world causes no changes whatever in plants; every plant character is an organization character (in Nägeli's sense) and the external conditions in which a plant is placed act merely as releasing stimuli.

The book should be read carefully by all who are interested in the philosophy of adaptation, since the volume as a whole is so written as to stimulate good thinking. However, it seems to the reviewer that the perspective is frequently distorted. In this country, at least, there is no need for such a continuous and hearty lampooning of teleological and vitalistic views, for they have been long since abandoned by most scientific investigators. That chance determines success and not a prudent foresight on the part of the plant is certainly the common view. Again, if one holds to a *potentielle Variationsbreite* wide enough to embrace all changes that ever occur in plants, it is obviously impossible ever to demonstrate the contrary by experiment; it is a concept incapable of proof or disproof. It seems far better to hold that both the organism and the environment are needed to secure the evolution of new forms; any other view seems to the reviewer fundamentally unthinkable.—HENRY C. COWLES.

Matthias Jacob Schleiden.

AN APPRECIATIVE biography of SCHLEIDEN by M. MÖBIUS, was published on the centennial of his birth, April 5, 1904.[2] MÖBIUS was related by marriage to SCHLEIDEN (whose second wife was MÖBIUS'S maternal aunt), and to him family sources of information have been open. SCHLEIDEN'S life was uneventful save for two incidents; the one an attempt at suicide on account of his want of success and dissatisfaction in the legal profession, and the second his resignation of the professorate at Jena because of the refutation of his theories on the origin of cells and the formation of the embryo. Clear and vigorous in thinking and expression, he demanded accuracy and lucidity in others and was ever ready to

[2] MÖBIUS, M., Matthias Jacob Schleiden zu seinem 100 Geburtstage. 8vo. pp. iv + 106, portrait, *figs. 2*. Leipzig: Wilhelm Engelmann. 1904. *M*2.50.

criticise sharply. Indeed, polemics seem to have been his delight, and he attacked without reference to the standing of his antagonist, as his famous controversy with LIEBIG shows, *à propos* of which UNGER wrote ENDLICHER: "Den arroganten Liebig hat Schleiden ganz köstlich zugedeckt."

The greater part of the book is devoted to an account of SCHLEIDEN'S published work, including an account of his famous cell-theory, his classical *Grundzüge der wissenschaftlichen Botanik*, many minor papers, popular addresses and books, his editorial activity, and his philosophical, religious, and speculative writings. For many important services to the science of his day, and especially to botany, this many-sided man deserves of the present generation fuller recognition. This book, with its interesting portrait and character portrayal, will promote this and is a useful contribution to the history of botany.—C. R. B.

MINOR NOTICES.

ENGLER [3] has published a new edition of his *Syllabus*, including the most recent results of his views as to relationships. This complete outline of his classification, including as it does the whole plant kingdom, is of great service to students of morphology as well as of taxonomy. There is a prefatory statement of the principles of this particular scheme of classification, and an appendix containing the geographical regions recognized by the author.—J. M. C.

WILLOUGHBY, Vermont, has long been famous for its flora, and KENNEDY [4] has done good service in publishing a compact account of the region and a list of 690 plants. The characteristic features of the region are wet cliffs and slides and sphagnous cedar swamps. The small area in which the species are massed is remarkable, probably nine-tenths of the indigenous species being found in two square miles.—J. M. C.

COULTER and DORNER [5] have published a simple key to the genera of the forest trees of Indiana, using the most obvious characters. Its practical value in large classes has led to its publication, and its usefulness is not restricted to Indiana.—J. M. C.

CRATTY [6] has published a list of the vascular plants growing in Emmet county, Iowa, a northwestern county bordering on Minnesota. The list includes 590 numbers.—J. M. C.

---

[3] ENGLER, A., Syllabus der Pflanzenfamilien. Eine Uebersicht über das gesamte Pflanzensystem, etc. Vierte, umgearbeitete Auflage. 8vo. pp. xxx+237. Berlin: Gebrüder Borntraeger. 1904. *M*4.

[4] KENNEDY, GEORGE G., Flora of Willoughby, Vermont. Reprinted from Rhodora **6**: 93–134. *pls. 54–56.* 1904.

[5] COULTER, STANLEY, and DORNER, H. B., A key to the genera of the forest trees of Indiana, based chiefly upon leaf characters. 16mo. pp. 12. Lafayette, Indiana: published by the authors. 1904.

[6] CRATTY, R. I., Flora of Emmet county, Iowa. A list of the native and introduced plants. Reprinted from Proc. Iowa Acad. Sci. **11**: 201–251. 1904.